



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,981	02/15/2002	Bruce A. Myers	DP-302458	9220

7590 05/15/2003

JIMMY L. FUNKE
DELPHI TECHNOLOGIES, INC.
Legal Staff Mail Code: A107
P.O. Box 9005
Kokomo, IN 46904-9005

EXAMINER

ZIMMER, MARC S

ART UNIT	PAPER NUMBER
----------	--------------

1712

DATE MAILED: 05/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

10/075,981

Applicant(s)

MYERS ET AL.

Examiner

Marc S. Zimmer

Art Unit

1712

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13-20 is/are allowed.
- 6) ☒ Claim(s) _____ is/are rejected.
- 7) ☒ Claim(s) 2-10 and 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Sengupta, U.S. Patent # 5,007,478. Sengupta discloses a heat sink configuration that may be employed to facilitate the dissipation of heat from an electronic device. The heat sink, which in one embodiment corresponds to a rigid preformed article that is placed in close proximity to a heat-generating apparatus, is comprised of a microencapsulated phase change material (PCM) and a host polymer matrix wherein said matrix is referred to therein as a "container". According to column 3, lines 41-43, a suitable PCM may be a paraffin, an organic acid, a metal salt hydrate, low melting point metal, or metal eutectic though specific embodiments of each of these are not disclosed. The encapsulating material (column 3, lines 55-65) is a polymer such as polystyrene or a metal. The host matrix is also general described as including polymers (column 4, lines 4-10).

Claims 1 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Colvin et al., U.S. Patent # 5,224,356. Colvin discloses a formulation for a potting agent comprising a epoxy resin (see abstract) and microcapsules that are capable of absorbing thermal energy radiated by an electronic device. The microcapsules are described in column 3, lines 38-53 as having a core-shell configuration wherein the core

is made up of a thermally-absorbing material, preferably a phase change material that conducts heat by a latent heat of fusion mechanism, and the shell is an electrically insulating-(polyamide) or conducting (metal) material. Paraffin and metal eutectics are cited as exemplary heat-absorbing substances. delineate

Allowable Subject Matter

Claims 2-10 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 13-20 are allowed. Neither reference contemplates any of the following: the incorporation of a heat conduct species other than the microencapsulated PCM, an encapsulating mixture comprised of polymer and dispersed dielectric particulate, and the utilization of a silicone as the host matrix.

Dani et al., U.S. Patent Application Publication # 2003/0077478 teaches a thermal interface material that mirrors the instant invention in numerous respects with the notable exception that the solder particles are not coated with a low dielectric material. Misra et al., U.S. Patent Application Publication # 2003/0027910 discloses a thermal interface composition having a silicone host polymer and wherein the component analogous to Applicant's heat-conducting dielectric particles is coated with the low melting metal alloy. Pause, WO 02/083440 A2 discloses an article that is intended to exert temperature control in automotive interiors and comprises a polyolefin

into which is dispersed three different PCMs having different transition temperatures.

Pause states that encapsulating the PCM is not preferred.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc S. Zimmer whose telephone number is 703-605-1176. The examiner can normally be reached on Monday-Friday 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Dawson can be reached on 703-308-2340. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

May 2, 2003



Robert Dawson
Supervisory Patent Examiner
Technology Center 1700